

# Installation- and Operating Instructions



## **Filter control 400V**

Item No. 3100000430

### **Function:**

The **osf**-filter control PC-25 enables a time-dependent switching on and –off of a 400V three-phase current filter pump or a 230V alternating-current filter pump by using a freely programmable switching program.

During the run time of the filter pump the heating of the pool is controlled by the electronic temperature control. During the filter pauses the heating is automatically switched off by the internal locking. On the front plate you can select the requested temperature for the pool water or you can switch off the heating. A floating contact (clamp 22 + 23) is available to connect the heating. For the operation with solar collectors, terminal clamps for a **osf**-solar-actuator are available.

Terminal clamps for a electronic level adjustment NR-12-TRS-2 (item no. 3030075020) enable a comfortable, automatic control of the water level in the pool. Thus the filter pump is additionally protected against damages, that could arise when operating the filter equipment without water.

Terminal clamps for a **osf**-EUROTRONIK-10 enable an upgrade of the filter control to an automatic filter- and backwash control.

By using additional connecting terminals it is possible to connect accessory devices, such as dosing equipments. The connectors 20+21 are floating and thus they can be used individually. During the filter periods the relay contact between connectors 20 and 21 are closed, out of the filter times this relay contact is opened. This contact can be charged with a voltage of up to max. 230 V and a current of max. 4A.

The terminal clamps for the winding protective contact enable the connection of a micro-switch to protect the winding, which is integrated in the motor winding of the filter pump. If this contact opens, e.g. due to overheating of the motor winding, the filter pump and the dosing equipment will be automatically switched off. As soon as the winding protective contact closes after cooling of the motor winding, the aggregates will switch on automatically. It is not necessary carry out a manual reset. The terminal clamps for the winding protective contact are charged with 230V.

The operation of the filter pump and the heating is displayed by pilot lights in the front lid – so a check is possible at any time.

The filter pump is protected against overload by an electronic motor protection (current range continuously adjustable up to 8A).

## **Technical Specifications:**

Dimensions:	220mm x 219mm x 100mm	
Operating voltage:	400V/50Hz	
Power consumption of the control:	ca. 10VA	
Breaking capacity:	Pump:	max. 3,0 kW (AC3)
	Heating:	max. 230V/4A
	Dosing equipment:	max. 230V/4A
Protection type:	IP 40	

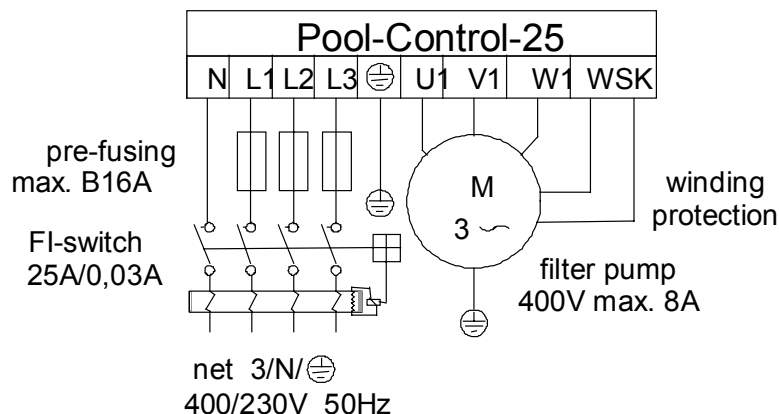
## **Installation:**

The control unit has to be installed humidity protected, depending on its protection type. The power supply of the device has to be carried out via an all-pole(?) main switch with a contact opening width of at least 3mm and an earth leakage circuit breaker with  $I_{FN} \leq 30\text{mA}$ . **Before opening the housing it is absolutely necessary to switch the device to zero potential.**

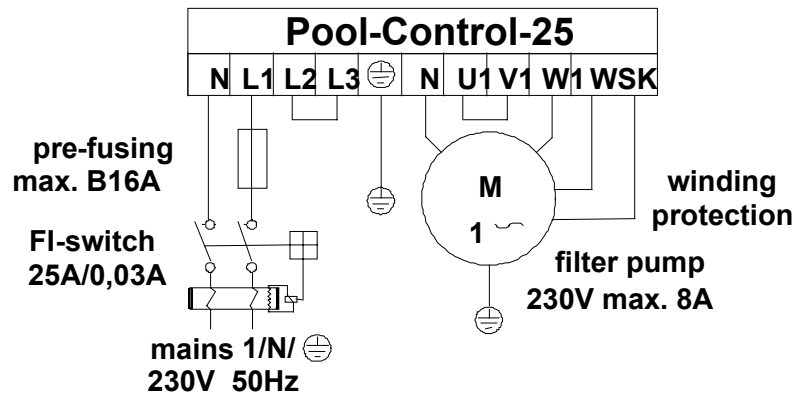
## **Electrical connection:**

The electrical connection as well as adjustment- and service work may only be carried out by accredited electrical specialists! The enclosed connecting diagrams and the corresponding prevailing safety regulations must be observed.

### **Mains supply for use of a 400V-three-phase current pump:**



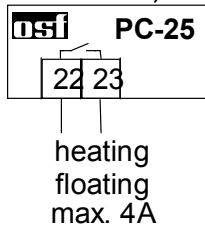
The factory-provided inserted bridge between the two clamps called WSK, has to be removed, if connected with a pump with winding protective contact. If no connection is carried out, it has to be remained screwed in. The clamps drive mains voltage!

**Mains supply for use of a 230V-alternating current pump:**

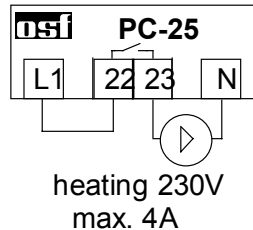
The factory-provided inserted bridge between the two clamps named WSK, must be removed, if connected to a pump with winding protective contact. If no connection is carried out, it needs to be remained screwed in. The clamps lead mains supply! For a proper operation of the electronic motor protection, the motor current has to be driven via all three contact points of the filter control (clamp L2 and L3 and U1 and V1 bridged, pump connected to W1).

**Connection of the heating:**

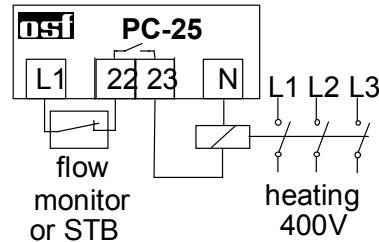
Floating contact (e.g. for the control of the burner)



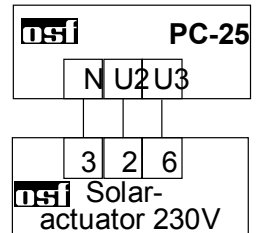
230V-heating (e.g. circulating pump)



400V-heating (e.g. electric heating)



Solar heating



The floating relay contact between the clamps 22 and 23 can be charged with a maximum voltage of 230V with maximum 4A.

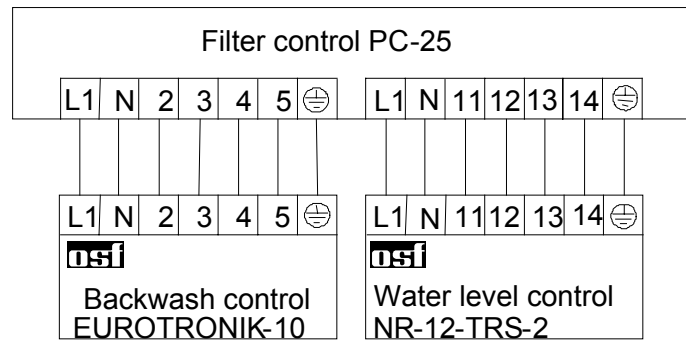
If the heating needs 230V, this required voltage can be obtained from the existing L1 clamps, which are sufficiently available in the PC-25. There are also clamps available for the N-connection of the heating.

For the control of a 400V three-phase-current heating, an external contactor has to be connected, that controls the heating.

In order to protect the heating against overheating, a flow monitor or a safety thermostat can be inserted instead of a bridge between clamp L1 and 22.

For a solar-heated operation a **nsi**-solar-actuator 230V can be connected to the clamps U2 and U3. With a solar operation, clamp U2 drives the mains voltage and clamp U3 is dead circuit. If the solar heating is not controlled, clamp U2 will be dead circuit and clamp U3 will drive the mains voltage. These contacts may be charged with maximum 230V/1,5A.

### Water level- and backwash control :



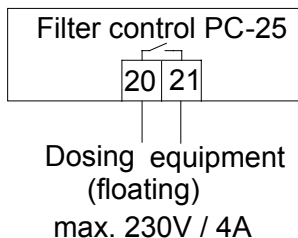
The factory-provided inserted bridge between clamps 13 and 14 must be removed on connecting a level control NR-12-TRS-2. If no level control is connected, the bridge between these clamps will have to be kept screwed in. In this case the clamps 11 and 12 will remain unused. The clamps drive mains voltage!

The factory-provided inserted bridge between clamps 3 and 5 has to be removed on connecting a EUROTRONIK-10. If no EUROTRONIK-10 is connected, the bridge between these clamps have to be remained screwed in. In these case clamps 2 and 4 will remain unused. The clamps drive mains voltage!

An opening of one of the contacts between clamps 13 and 14 or 3 and 5 will result in an immediate switching off of the filter pump, the dosing equipment and the heating.

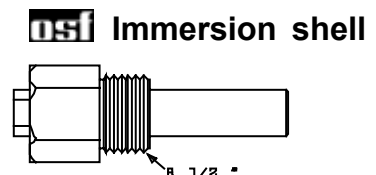
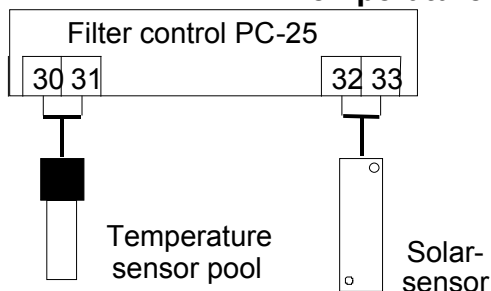
The closing of one of the contacts between clamps 2 and 4 or 11 and 12 will cause a forced switch on of the filter pump, whereas the heating and the dosing equipment will be switched off.

### Additional connecting possibilities:



In the control unit there is a floating relay contact between the clamps 20 and 21. This can for instance be used to control the dosing equipment (the contact will be closed during the filter operation). This contact can be charged with a maximum of 230V/4A.

### Temperature sensor:



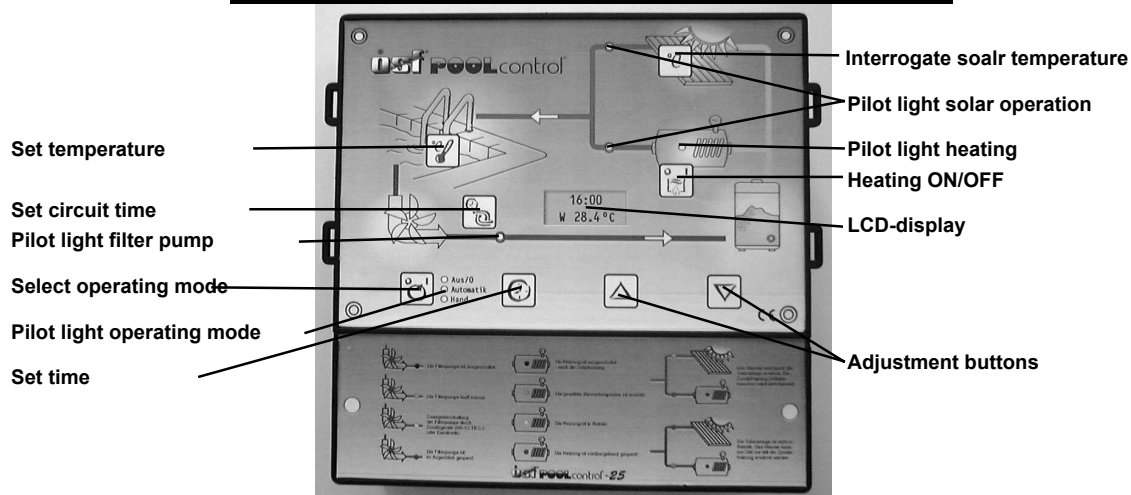
The pool temperature sensor is connected to the clamps 30 and 31. As a standard the temperature sensor is delivered with cable length of 1.5m. If required, this can be lengthened with a two-core cable (minimum diameter 0,5mm<sup>2</sup>) up to a maximum of 20m. It should be avoided to lay the sensor lead near power lines to exclude possible disturbance.

Since an exact temperature control is only carried out with a good heat transmission within the temperature sensor and the pool water, an **ISI**-immersion shell R ½" (art.no. 3200200003) has to be installed into the pipe system.

Any polarity of the sensor is possible.

Additionally it is possible to connect a solar temperature sensor (art.no.3100000030) to the clamps 32 and 33. As a standard the temperature sensor is delivered with a cable length of 20m. If required it can be lengthened with a two-core cable (minimum diameter 0,5mm<sup>2</sup>) up to a maximum of 50m. It should be avoided to lay the sensor lead near power lines to exclude possible disturbance. The solar temperature sensor is to be installed at the output of the solar collector and it must have a good thermal contact to the backflowing water.

## **Control elements on the front plate:**



### **LCD-display**

14:46  
23,4 °C

Normal operation display with current water temperature and time.

level-  
control

The filter pump has been switched on by the level control NR-12-TRS-2 .


back-  
washing

The filter pump has been switched on by the backwash control EUROTRONIK .


pump  
locked

The filter pump has been switched off by the EUROTRONIK, the level control NR-12-TRS-2 or by the winding protective contact.

motor-  
protect.

The filter pump has been switched off by the electronic motor protection. The pump can be switched on again with the key  after it has been cooled and after the cause for the overload has been settled.

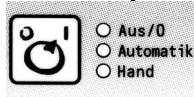
phase  
fault




The filter pump has been switched off, because there is no current in all three phases of the three-phase-current network. After the mistake has been removed, the pump can be switched on again with the key .

sensor  
defect.

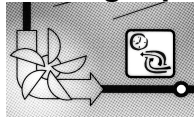
The temperature control is out of operation, because the temperature sensor is not connected or defect.

## Select operation mode



With the key  the control can be switched off and it can be selected between manual and automatic operation respectively. **Attention!** By doing so the control is not switched to zero potential! The selected operation mode is displayed via pilot lights next to the  key. If the pilot light "OFF/0" is flashing, the filter pump has been switched off by the motor protection. Before switching on the filter system again, this error message has to be confirmed by pressing the  key.

## Pilot light pump



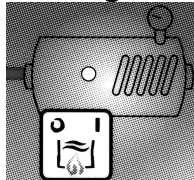
This pilot light indicates the operation of the filter pump. You can see the operation mode from the colour of the light:

**green:** Normal operation of the filter pump.

**yellow:** The pump has been switched on by the level control NR-12-TRS-2 or the backwash control EUROTRONIK, or the filter pump is running after the additional heating has been switched off.

**red:** The pump has temporarily been switched off by the level control NR-12-TRS-2 or the backwash control EUROTRONIK .

## Pilot light heating



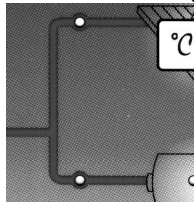
This pilot light indicates the operation of the heating. The operation mode can be seen by the colour of the light:

**green:** The temperature control is running, the selected water temperature has been reached.

**yellow:** The heating is running, the selected temperature has not been reached yet.

**red:** The additional heating has temporarily been switched off due to a lack of a normal filter operation or because the solar heating is currently running.


## Solar heating

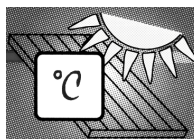


If a solar sensor is connected to the control these two pilot lights will display the current operation mode of the solar heating:

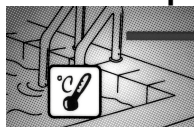
If the upper light is red and the down light green, the water is flowing through the heat exchanger and can be heated with the additional heating.

If the upper light is green and the down light is red, the solar heating is being used and the additional heating is switched off.


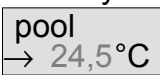



You can check the temperature at the solar sensor by using the  key.



## Select temperature





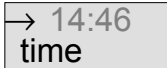



The temperature of the pool water is selected by using the  key:

1. Press key   $\Rightarrow$  the display indicates .
2. Now the requested temperature within a range of 0.1°C up to 40°C can be set with the keys  and .
3. To save the requested temperatures, please press the  key again. If no key is pressed for more than 10 seconds on the temperature setting, then the last selected temperature will be automatically saved and the normal operation display will appear again.

## Set time





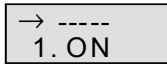



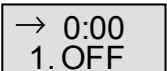



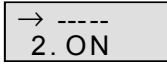

The current time is set with the  key:


1. Press  key  $\Rightarrow$  the display indicates .
2. Now the time can be set with the  and  keys. Press the  key again to save the time. If on setting no key is pressed for more than 10 seconds, the last displayed time will be automatically saved and the normal operation display will appear again.


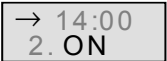



## Programming time switch



The installed time switch is programmed with the  key, whereas the on period and the corresponding off period always have to be entered in parallel:

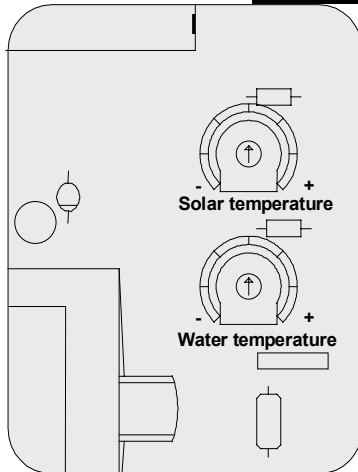
1. Press  key  $\Rightarrow$  the display will show .
2. By pressing the  and  keys the requested time can now be set.
3. Press  again  $\Rightarrow$  the display will show .
4. By pressing the  and  keys the requested off period can now be set.
5. Press  key again  $\Rightarrow$  the display will show .
6. Additional switching times can now be programmed as described in items 2-5.
7. To save the switching times, press the  key again. If on setting no key is pressed for more than 10 seconds, the last displayed switching time will be automatically saved and the normal operation display will be displayed again.

If switching times have already been programmed, these can be deleted by using the  key:

1. Press the  key as long as the display shows the switching time that is to be deleted. .
2. Set the on period with the  and  keys to  (between 23:59 and 0:00).

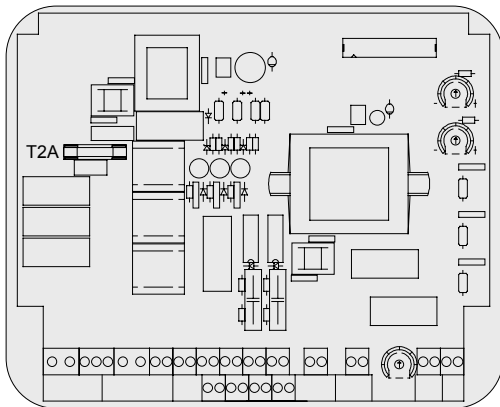
Delete the on period by pressing the  again – the corresponding off period will also be automatically deleted.

## **Adjustment of temperature control:**



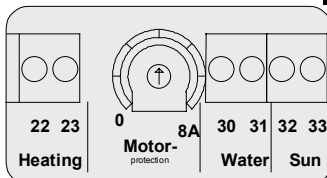
The electronic temperature control and the temperature sensor have been matched factory-provided. If one of the sensors is being exchanged or the sensor leads is being lengthened, you have to carry out a new adjustment with the potentiometers in the control unit, as necessary. A clockwise turning of the potentiometer for the water temperature sensor will cause an increase of the displayed water temperature. If the potentiometer for the solar sensor is turned clockwise, an increased collector temperature will be displayed. Since the solar temperature control only works properly with precisely adjusted sensors, this adjustment should only be carried out by a trained service technician.

## **Fuses:**



Inside the housing the electronic control is protected by a 2A micro-fuse on the circuit board. The short-circuit protection for the filter pump has to be ensured by customer provided pre-fuses of max. 16A.

## **Electronic motor protection:**




The three-phase-current filter pump is protected against damages caused by overload by an electronic motor protection. For this the motor protection has to be adjusted to the nominal current of the filter pump (see type plate of the pump). The adjusting regulator for the motor protection is placed in the clamping box, to protect it against inadvertent adjusting. If the nominal current of the filter pump is not known, the motor protection can be adjusted according to the following process:

1. Turn adjusting screw of the motor protection to the right stop.
2. Switch on pump
3. Turn adjusting screw slowly anti-clockwise as long till the

motor protection is triggered and the error signal will appear.

motor-protect.

4. Turn adjusting screw clockwise by some angular degrees (approx. 10%).
5. Confirm error signal with the  key – the filter pump can be switched on again.



# Combination PC-25 with NR-12-TRS-2 and EUROTNIK-10

